

FORM PTO-1390 (Modified)
(REV 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

RCA 89027

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/981000

INTERNATIONAL APPLICATION NO.
PCT/US99/14832

INTERNATIONAL FILING DATE
30 June 1999 (30.06.99)

PRIORITY DATE CLAIMED

TITLE OF INVENTION

DBS FEATURE EXTENSION ARCHITECTURE

APPLICANT(S) FOR DO/EO/US

Keith Reynolds Wehmeyer

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☒ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Return Postcard Receipt

EXPRESS MAIL LABEL NO. EK816049581US

DATE DEPOSITED: December 3, 2001

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|--|--|--|
| APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.492(a)(1)) 09/981000 | INTERNATIONAL APPLICATION NO. PCT/US99/14832 | ATTORNEY'S DOCKET NUMBER RCA 89027 |
|--|--|--|

24. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **\$1040.00**
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **\$890.00**
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$740.00**
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$710.00**
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **\$100.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE |
|--------------------|--------------|--------------|-----------|
| Total claims | 8 - 20 = | 0 | x \$18.00 |
| Independent claims | 2 - 3 = | 0 | x \$84.00 |

Multiple Dependent Claims (check if applicable). ☐

TOTAL OF ABOVE CALCULATIONS =

☐ Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.

SUBTOTAL =

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

TOTAL NATIONAL FEE =

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

TOTAL FEES ENCLOSED =

| | |
|-----------------------|----|
| Amount to be refunded | \$ |
| charged | \$ |

- a. ☐ A check in the amount of _____ to cover the above fees is enclosed.
- b. ☒ Please charge my Deposit Account No. **07-0832** in the amount of **\$930.00** to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **07-0832** A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Mr. Joseph S. Tripoli
THOMSON multimedia Licensing Inc.
Patent Department
PO Box 5312
Princeton, New Jersey 08540

SIGNATURE

FRANK Y. LIAO

NAME

40,065

REGISTRATION NUMBER

December 3, 2001

DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Keith Reynolds Wehmeyer
Filed : Herewith
For : DBS FEATURE EXTENSION ARCHITECTURE

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Sir:

In the US national phase application of PCT/US99/14832 filed herewith, please enter the following amendments:

IN THE SPECIFICATION:

Please amend the specification as follows:

On Page 1, after the sub-title BACKGROUND OF THE INVENTION, insert the following paragraph:

-- This application claims the benefit of under 35 U.S.C. § 365 of International Application PCT/US99/14832, filed June 30, 1999, which was published in accordance with PCT Article 21(2) on January 11, 2001 in English.--

IN THE CLAIMS:

Please amend the claims (which are the annexes of the International Preliminary Examination Report) as follows. A marked-up version of the claims is attached hereto:

1.(AMENDED) In a stand-alone internet receiver for receiving NTSC program information including program guide information and internet data, coupled to a stand-alone digital video receiver for receiving program information including program guide information, a method for forming a combined program guide comprising the steps of:

providing the internet receiver with a communications input/output port;

linking the communications input/output port of the digital video receiver with the communications input/output port of the internet receiver;

providing the internet receiver with the program guide information received by the digital video receiver through the communications ports; and

integrating the digital video program guide information with the NTSC program guide information on the internet receiver to obtain a combined program guide for viewing on a display device.

2. The method of claim 1, wherein the digital video receiver receives program guide information via a digital data stream, and the internet receiver receives program guide information via the VBI of an analog signal.

3. The method of claim 1, wherein the step of linking the communications input/output port of the digital video receiver with the communications input/output port of the internet receiver may include establishing a low speed data communications bus and a high speed data bus.

4. The method of claim 3, wherein the high speed data bus is clocked by a signal from the digital video receiver.

5. The method of claim 1, wherein the digital video receiver comprising a DBS receiver.

6.(AMENDED) In a stand-alone DBS receiver for receiving DBS program information coupled to a stand-alone internet receiver for receiving internet data, a method of delivering internet content to the display device comprising the steps of:

- receiving a DBS data stream including internet content data;
- processing the DBS data stream;
- providing a data link between the DBS receiver and the internet receiver;
- transmitting the internet content data in the DBS data stream to the internet receiver through the data link, wherein the internet content data is processed by the internet receiver and displayed on a display device.

7. The method of claim 6, wherein the DBS data stream includes digital video, the method further comprising the step of:
- providing the DBS video to the internet receiver.
 - displaying the interactive content data on the display device.
8. The method of claim 6 wherein the data link is a wide-band data link.

IN THE ABSTRACT:

Please add the following Abstract.

-- An enhanced electronic program guide (EPG) capable of displaying DBS program information and NTSC program information seamlessly and in real-time on a display device is accomplished, in one form, by a wide-band data link between a DBS receiver adapted to receive a DBS broadcast data stream and an internet set-top unit, the internet set-top unit adapted to receive NTSC audio/video signals and internet data/information. In another form, the DBS receiver is controlled by the internet set-top box. Supplemental information transmittable on the DBS data stream may also be displayed on the display device. --

REMARKS

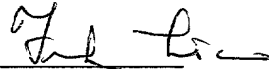
The specification has been amended to include a reference to the priority applications.

Claims 1 and 6 have been amended to remove reference indicia.

To meet the requirements of the United States, the Abstract (as originally filed in the PCT application) is added.

No fee is believed to have been incurred by virtue of this amendment.
However if a fee is incurred on the basis of this amendment, please charge such fee
against deposit account 07-0832

Respectfully submitted,
Keith Reynolds Wehmeyer



Frank Y. Liao
Attorney for Applicant
Registration No. 40,065
609/734-9517

THOMSON multimedia Licensing Inc.
Patent Operation
PO Box 5312
Princeton, NJ 08543-5312

December 3, 2001

MARKED UP VERSION OF THE AMENDED CLAIMS

1.(AMENDED) In a stand-alone internet receiver [(32)] for receiving NTSC program information including program guide information and internet data, coupled to a stand-alone digital video receiver [(10)] for receiving program information including program guide information, a method for forming a combined program guide comprising the steps of:

providing the internet receiver [(10)] with a communications input/output port [(56)];

linking [(66)] the communications input/output port [(30)] of the digital video receiver with the communications input/output port of the internet receiver;

providing the internet receiver with the program guide information received by the digital video receiver through the communications ports; and

integrating the digital video program guide information with the NTSC program guide information on the internet receiver to obtain a combined program guide for viewing on a display device [(48)].

2. The method of claim 1, wherein the digital video receiver receives program guide information via a digital data stream, and the internet receiver receives program guide information via the VBI of an analog signal.

3. The method of claim 1, wherein the step of linking the communications input/output port of the digital video receiver with the communications input/output port of the internet receiver may include establishing a low speed data communications bus and a high speed data bus.

4. The method of claim 3, wherein the high speed data bus is clocked by a signal from the digital video receiver.

5. The method of claim 1, wherein the digital video receiver comprising a DBS receiver.

6.(AMENDED) In a stand-alone DBS receiver [(10)] for receiving DBS program information coupled to a stand-alone internet receiver [(32)] for receiving internet data, a method of delivering internet content to the display device comprising the steps of:

receiving a DBS data stream including internet content data;

processing the DBS data stream;

providing a data link [(66)] between the DBS receiver and the internet receiver;

transmitting the internet content data in the DBS data stream to the internet receiver [(32)] through the data link, wherein the internet content data is processed by the internet receiver and displayed on a display device [(48)].

7. The method of claim 6, wherein the DBS data stream includes digital video, the method further comprising the step of:

providing the DBS video to the internet receiver.

displaying the interactive content data on the display device.

8. The method of claim 6 wherein the data link is a wide-band data link.

DBS FEATURE EXTENSION ARCHITECTURE**BACKGROUND OF THE INVENTION****1. Field of the invention**

5 The present invention relates to the field of signal processing and, more particularly to integrated direct broadcast satellite systems, NTSC signal reception and display systems, and internet set top boxes.

2. Description of the related art

10 Today, there are many choices and/or sources of audio/video programming available to consumers for display on a television. These various sources of programming can bring many channels of entertainment and information into the home such as movies, sitcoms, news, sporting events, pay-per-view events, and the like. Such sources of programming range from over-the-air or off-air television signals receivable on an antenna,
15 to direct broadcast satellite, to the internet.

 However, at present, each programming source requires a different system or receiver to decode and process the incoming audio/video signals. In the case of a direct broadcast satellite (DBS) system wherein a digital data stream is transmitted from a satellite to a receiving dish, a DBS receiver is
20 required to decode and process the incoming digital data stream. In the case of internet viewing, a separate computer system is required to receive and process the pages or content of the internet. Set-top internet receivers/boxes now integrate NTSC television processing capabilities receivable from several sources such as antennas and what is known as cable TV from a cable
25 system.

 Also, program guide or channel guide features are provided by each program source, such as DBS systems and off-air (NTSC) broadcasting. Program or channel guide information is transmitted in the digital data stream in the case of a DBS system, while such program information is transmitted as
30 part of the VBI (Vertical Blanking Interval) of an analog NTSC television signal. More specifically, in the case of the digital data stream of a DBS, program guide information is transmitted along with the digital video signals as part of the PSI (program specific information) table within a standard encoded

transport stream, such as MPEG-2. Additionally, each system requires separate control, tuning, and program guide compiling for viewing.

WO 98/56172 describes a system which has a program guide for providing television program information. The program guide incorporates an Internet icon for allowing a user to surf the internet by selecting the icon. In addition, D2 GB 2 323 489 A provides an electronic program guide for providing program information for both television programs and internet programs. Neither of these documents, however, describes a system for providing, for example, an integrated program guide for television program information which combines program information sources from both an NTSC receiver and a DBS receiver. In addition, neither of the documents address how to integrate two stand-alone receivers into an integrated system, as in the case of a user having already purchased a DBS receiver or an internet receiver but lacking the other capability."

What is needed is an integrated system for DBS, internet, and NTSC television programming.

SUMMARY OF THE INVENTION

The present invention is directed towards an integrated DBS and internet receiver system wherein a single program guide encompassing DBS program channels and network program channels are compiled.

According to another aspect of the present invention, a DBS system is controllable through a linked internet receiver wherein seamless tuning of all program channels is accomplished through the internet receiver. As well, any broad-band data, including user selectable internet links received through DBS channels, may be used to retrieve and view internet data.

In one form, in a DBS/internet receiver system, the DBS system having a DBS receiver adapted to receive DBS program information including program guide information, the internet receiver having an internet receiver adapted to receive network program information and data including program guide information and internet data, there is provided a method for forming a combined DBS/network program guide. The method includes, providing the DBS receiver with a wide-band data/communications input/output port, providing the network receiver with a wide-band data/communications input/output port, linking the wide-band data/communications input/output port of the DBS receiver with the wide-band data/communications input/output port of the internet receiver, providing the internet

Another advantage of the present invention is the ability to remotely control a DBS receiver with an internet/NTSC signal receiver.

A further advantage of the present invention is the ability to have enhanced DBS digital broadcasting using supplemental information carried by the DBS digital data stream.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned other features and advantages of this invention, and the manner of attaining them, will become more apparent and the invention will be better understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings wherein:

Fig. 1 is a diagrammatic view of a connection scheme between a DBS unit, an Internet receiver unit, and a display device in accordance with the present invention; and

Fig. 2 is a block diagram of an interconnection scheme between the DBS unit and the Internet receiver unit of Fig. 1.

The exemplification set out herein illustrates a preferred embodiment of the invention, in one form, and such exemplification is not to be construed as limiting the scope of the invention in any manner.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings and, more particularly Fig. 1, there is shown audio/video system 8 comprising direct broadcast satellite (DBS) unit 10, such as a DIRECTV® unit, internet unit 32, and display device 48 that are interconnected and function as described below.

DBS unit 10 receives signals from DBS dish or antenna 12 via cable 14 that plugs into input port 16. Input port 16 is coupled internally to appropriate circuitry as is known in the art in order to decode and/or process an incoming DBS data stream (an all digital data stream) typically transmitted from a satellite (not shown). DBS dish 12 includes feed horn 13 which receives the DBS data stream reflected by dish 12 as is known in the art. DBS unit 10 also includes telephone port 18 that is in communication with a telephone system via telephone line 20 connected to telephone jack 22 through which the DBS unit may communicate with a dial-up system. DBS unit 10 also includes a

receiver with the program guide information received by the DBS receiver through the wide-band data/communications ports, and integrating the DBS program guide information with the network program guide information on the internet receiver to obtain a combined DBS/network program guide for viewing on a display device.

- 5 An advantage of the present invention is the ability to have an enhanced or super program guide that combines the program guide of a DBS system with the program guide of an NTSC system.

video output jack or port 24, a left audio output jack or port 26, and a right audio output jack or port 28 collectively marked "A/V OUT". Video output port 24 may be an S-video port or a composite video port. As well, but not shown, there may be a second video output port. In this case, the first video output port could be the S-video output port while the second video output port could be the composite video output port, or vice versa. The A/V OUT ports are coupled internally to appropriate circuitry as is known in the art. Additionally, in accordance with an aspect of the present invention, DBS unit 10 also includes high-speed or wide-band input/output port 30 that may utilize a DB15 type connector. Wide-band input/output port 30 is coupled internally to appropriate circuitry as is known in the art and is used to send and receive serial data for control information and for parallel digital output of data transmitted from the satellite. The wide-band data link between DBS unit 10 and internet unit 32 is used as a data bus. While not shown, it should be understood that DBS unit 10 also includes other typical features and/or components.

Internet receiver unit 32 is an integrated set-top box/internet receiver otherwise known as an NTSC receiving internet receiver with integrated software, such as a WebTV® "Plus" unit. Internet unit 32 is adapted to receive, process and/or decode internet data via telephone lines, cable lines, or other sources, as well as receive, process and/or decode television (NTSC audio/video) signals from a cable system, airwaves or other source. The television signals may include Extended Data Service (XDS) information such as closed captioning and V-chip (ratings) data for the various programs as well as any other data or audio/video information. An NTSC audio/video signal is receivable from either antenna 38 or a cable system through cable jack 40 via cable 36 coupled to input port or jack 34. Input port 34 is coupled internally to appropriate circuitry that processes the incoming NTSC signal in a known manner for eventual displaying on display device 48. Internet unit 32 is coupled to a telephone system via telephone input/output port 42, telephone line 46 and telephone jack 44 which is then coupled in the usual manner with the telephone system. Internet unit 32 receives digital data from the Internet via the telephone system. Of course, other means of receiving

Internet data may be used such as a cable TV system via an internal cable modem (not shown) or other source.

Additionally, internet unit 32 includes video input jack or port 50, left audio input jack or port 52, and right audio input jack or port 54, collectively marked "SLR" (S-video, Left, Right). The SLR inputs are coupled internally to appropriate circuitry as is known in the art. Video input port 50 may be an S-video input port or composite video input port that is coupled to video output port 24 of DBS unit 10 via communication line or cable 60 in order to receive the video output from DBS unit 10. As well, but not shown, there may be a second video input port. In this case, the first video input port could be the S-video output port while the second video output port could be the composite video output port, or vice versa. Internet unit 32 also has left audio input port or jack 52 that is in communication with left audio output port 26 of DSS unit 10 via line 62 in order to receive left channel audio from DSS unit 10, and right audio input port or jack 54 that is in communication with right audio output port 28 of DSS unit 10 via line 64 in order to receive right channel audio from DSS unit 10. In addition to the above input ports, internet unit 32 has high-speed or wide-band input/output data port 56 which is in communication with high-speed input/output data port 30 of DSS unit 10 via data/communication cable 66. Wide-band input/output data port 56 may utilize a DB-15 type connector. Such interface between DSS unit 10 and internet unit 32 provides a serial control bus between DSS unit 10 and internet unit 32 as well as a parallel digital output from DSS unit 10 to internet unit 32 for data transmitted from the satellite and received by DSS unit 10 through cable 14 (DSS data stream). High-speed input/output data port 56 is coupled internally to appropriate circuitry within internet unit 32 as is known in the art.

Internet unit 32 also includes video output port or jack 70, left audio output port or jack 72, right audio output port or jack 74, and RF output port or jack 68 all for providing various audio and video signals to display unit 48 and collectively labeled "SLR". Again, video output port 70 may be an S-video output port or a composite video output port. As well, but not shown, internet unit 32 may include a second video output port. In this case, the first video

output port would support S-video, while the second video output port would support composite video, or vice versa.

Display unit 48, such as a television or monitor, is coupled to internet unit 32 in order to receive the various audio and video signals therefrom.

5 Specifically, display unit 48 includes RF input port or jack 76 which is in communication with RF output port 68 of internet unit 32 via RF cable 78, such as coaxial cable. The RF connection between internet unit 32 and display device 48 allows the RF output from internet unit 32 to be received by display unit 48 on channel 3 or 4 via an RF modulator (not shown), providing an RF
10 "pass-through" capability when internet unit 32 is in a standby mode. This functionality is similar to the functioning of a coupled VCR and television. Display unit 48 also includes video input port or jack 80, to receive S-video or composite video, which is in communication with video output port 70 of internet unit 32. While not shown, display device 48 may include a second
15 video input. In the case of a second video input, one video input would be an S-video input while the other video input would be a composite video input. Further, display unit 48 includes left audio input port or jack 82 which is in communication with left audio output port 72 of internet unit 32 via line 88 in order to receive left channel audio, and right audio input port or jack 84 which
20 is in communication with right audio output port 74 of internet unit 32 via line 90 in order to receive right channel audio. S-video, composite video and left and right audio outputs of internet unit 32 and inputs of display device 48 may be used to provide a higher quality audio/video experience than the RF feed. While not shown, it should be understood that display device 48 may also
25 include various audio and video outputs for connection to other audio/video devices.

With reference now to Fig. 2, there is shown interconnect or interface diagram 92 for internet unit 32 that allows internet unit 32 to communicate with and/or receive data from DBS unit 10 over a wide-band data link. It should be
30 understood that internet unit 32 may be any type of data processing box, wherein the data processing box accepts analog and digital data signals, such as NTSC television signals and MPEG-2 data over the internet. Wide-band

port 56 (labeled as a DB15 connector) provides a communication interface for LOW SPEED data as well as HIGH SPEED data to and from DSS unit 10.

Low speed serial control data from DSS unit 10 is received into port 56 and is routed on line 120 into first inverter buffer 98 then second inverter buffer 100 before it is sent along RXD (receive data) line and into the RXD (receive data) serial data input of system interface IC 102. As shown, system interface IC 102 includes one UART (Universal Asynchronous Receive/Transmit). System interface IC may be a SOLO IC which is a graphics special ASIC (Application Specific Integrated Circuit) of a WebTV® type internet/set-top box unit and is in communication with the microprocessor (not shown) of internet unit 32. Other devices capable of receiving serial data may also be used. Inverter buffers 98 and 100 are preferably Schmitt Trigger buffers. ElectroStatic Discharge (ESD) circuitry 96 is provided before inverter buffer 98 for electrostatic protection. Low speed serial control data from internet unit 32 is sent from TXD (transmit data) output of UART 102 into first inverter buffer 104 and then into second inverter buffer 106. Second inverter buffer 106 is coupled via line 122 with wide-band port 56 such that the low speed serial control data is sent to DSS unit 10. ElectroStatic Discharge (ESD) circuitry 108 is preferably provided between inverter buffer 106 and wide-band port 56 for electrostatic protection. The low speed serial control functionality is provided with a full duplex serial capability operating at a maximum of 9600 baud, and provides a means of control between DBS unit 10 and internet unit 32.

The HIGH SPEED DATA path (labeled as such in Fig. 2) is an 8 bit wide data bus and includes ElectroStatic Discharge (ESD) protection circuit 112. High speed data is received from DSS unit 10 into FIFO (First In First Out) memory 114 via the HIGH SPEED DATA PATH while FIFO memory 114 is strobed or clocked with a clock signal from DBS unit 10 via CLK path from port 56. The clock signal is conditioned with Schmitt Trigger inverter buffer 118 and also includes ElectroStatic Discharge (ESD) protection circuit 116. In operation, when FIFO memory 114 is half full, FIFO memory 114 provides an interrupt signal to system interface IC 102 via line HALF_FULLn (also the command label) that is coupled to INTERRUPT. The interrupt signal allows

system interface IC 102 to receive 128 bytes of data (one half of FIFO memory 114's 256 byte capacity) via DATA BUS line and into RIOD (Receive IO Data). The data word length is 8 bits with one control bit, hence the nomenclature "7:0". As well, system interface IC 102 includes chip select outputs OEn and CSn that are received by FIFO memory 114 via lines OEn and CSn respectively. In this manner, internet unit 32 and DSS unit 10 can provide each other with control data and transmit and receive high and low speed data.

With the above connections described with respect to the various incoming digital (both the DBS data stream and the internet data stream) and NTSC signals, and the interconnections of DBS unit 10, internet unit 32, and display device 48, functionality in accordance with an aspect of the present invention will now be discussed.

With DBS unit 10 coupled to internet unit 32, internet unit 32 is capable of controlling DBS unit 10. In this manner, DBS unit 10 becomes a slave peripheral to internet unit 32. Channel tuning for both internet unit 32 and DBS unit 10 can be accomplished seamlessly through internet unit 32 only, such that both NTSC and DBS audio/video sources may be displayed on display device 48. As an example, a user may, via a remote control (not shown), select channel 13 (or any other "off air" channel which go to channel 69, or a cable channel) for viewing on display unit 48 through internet unit 32, and internet unit 32 would tune its own internal tuner to the correct channel as received by either antenna 38 or cable 40, and then provide that output to display device 48. If the user selects channel 206 on the remote, internet unit 32 would recognize channel 206 as a DBS channel (over and above the off-air and cable channels), and thus utilize the communication capability to cause DBS unit 10 to tune to channel 206 and provide the audio/video output to internet unit 32 that would in turn provide the audio/video output to display device 48. Utilizing various commands, internet unit 32 can query DBS unit 10 and cause it to turn on and tune to a particular channel. Because of the interconnectivity between DBS unit 10 and internet unit 32 as described above, there is no need for IR "blaster" cabling and/or configuration routines.

Another capability of system 8 due to its interconnectivity is the ability to provide Electronic Program Guide (EPG) integration of the DBS EPG from DBS unit 10 and the NTSC EPG from internet unit 32. Electronic Program Guide (EPG) information is part of the DBS digital data stream received by dish 12 and is for the various DBS channels receivable by DBS unit 10. EPG information for the various NTSC channels is also receivable in the VBI (Vertical Blanking Interval) of certain NTSC signals. Internet unit may request this information from DBS unit 10 and seamlessly integrate the DBS EPG information with the NTSC EPG information. Channel selection is then accomplished through internet unit 32 as described above. DBS information may also be contained in the NTSC VBI of a channel, or through a dial-up database via telephone line 46.

DBS bandwidth may also be used to provide other information services such as news summaries, sports scores, stock quotes, and the like. This information may be overlaid on any DBS or NTSC program by internet unit 32.

Additionally, DBS bandwidth (data stream) may be used as a replacement to dial-up internet access by providing a series of web (internet) pages thus freeing up the telephone line. A DBS "Web channel" either as a separate broadcast DBS channel or through the DBS EPG would be selectable by the user. Instead of the Web channel containing a video and/or audio transport, the Web channel would contain only a data transport which would be relayed directly to internet unit 32. The user would then have the option of viewing a received web page or store it in a cache for later viewing. The Web channel would utilize the DBS bandwidth by delivering such data on a single transponder. Large quantities of data may be transmitted on a single transponder making efficient use of available bandwidth or smaller quantities of data may be transmitted on all transponders for constant availability.

Further, in accordance with an aspect of the present invention, wide-band data may be integrated with the DBS data stream as data payload. The wide-band data payload would be associated with at least one and preferably each DBS program and could include internet or internet type/linked data. When a DBS program is selected and viewed, the wide-band data payload that is received by DBS unit 10, is transmitted out of wide-band data port 30 of

DBS unit 10 into wide band data port 56 for receipt by internet unit 32.

Internet data is thus transmitted from the satellite, received on current DBS systems, and processed by the internet receiver. This allows the wide-band data payload content to be overlayed with the satellite's video signal, as well
5 as other video manipulations. In one form, by providing the wide-band data as a multicast internet protocol (such as Intericast or ATVEF), internet unit 32 would interpret this information/data and use it in conjunction with the received audio/video signal. It should be understood that the ATVEF specification includes HTML extensions to size/scale a video window, position same on the
10 screen, and overly supplemental text and graphics (also formatted in HTML) around or over the video signal. The DBS data stream can thus deliver supplemental interactive data, including internet data, as another transport for a given program (in addition to the audio, video, and closed-captioning transports that may already be available). Any interactive internet content is
15 deliverable over and receivable by existing DBS systems. Since the DBS system is coupled to the internet receiver by the wide-band data link, the functionality of DBS system is expanded to include interactive content delivered by the broadcasting satellite without modification to the existing DBS unit.

20 DBS unit 10 and internet unit 32 may also be combined into one unit able to receive a DBS data stream, an NTSC data stream, and be coupled to the various I/O devices/lines as described above. As well, display device 48 may incorporate all of the above. Such a combined unit (containing all the features and functions of internet unit 32 and DBS unit 10) could utilize the
25 same data stream and deliver the same functionality.

The DBS data stream can also carry programs that may be executable on Internet unit 32. As an example, a binary image may be sent such as an operating system (OS) or application. The code is resident on internet unit 32 or "native", meaning a binary image compiled to run on the hardware of
30 internet unit 32. Additionally, Java applications may be sent in the DBS data stream and executed on internet unit 32, with internet unit 32 having a Java Virtual Machine (JVM). Java programs run on any hardware platform because

they are interpreted by the JVM, rather than compiled for a specific hardware architecture.

- As well, URLs (Universal Resource Locators) may be received using Extended Data Services (XDS) as part of the EIA-746 specification which then may be used by
- 5 the browser of internet unit 32 to display the web site according to the URL by delivering the URL through the DBS data stream or through a dial-up connection. Since DBS transmits closed captioning and XDS through a second data stream (there is no VBI or Vertical Blanking Interval in the digital domain) the URLs are processed directly, rather than waiting for the DBS box to re-encode them back into
- 10 the VBI of the video output.

- While this invention has been described as having a preferred design, this application is intended to cover any variations, uses, or adaptations of the invention using its general principles. For example, the wide-band data link may be replaced with any data port having the capability of transmitting the defined information.
- 15 Further, this invention may be utilized with any digital set-top box, such as a digital cable box or MMDS, which provides for the simultaneous delivery of data. Further, this application is intended to cover such departures from the present disclosure as come within known or customary practice in the art to which this invention pertains and which fall within the limits of the appended claims.

CLAIMS

1. In a stand-alone internet receiver (32) for receiving NTSC program information including program guide information and internet data, coupled to a stand-alone digital video receiver (10) for receiving program information including program guide information, a method for forming a combined program guide comprising the steps of:

providing the internet receiver (10) with a communications input/output port (56);

- linking (66) the communications input/output port (30) of the digital video receiver with the communications input/output port of the internet receiver;

providing the internet receiver with the program guide information received by the digital video receiver through the communications ports; and

- integrating the digital video program guide information with the NTSC program guide information on the internet receiver to obtain a combined program guide for viewing on a display device (48).

2. The method of claim 1, wherein the digital video receiver receives program guide information via a digital data stream, and the internet receiver receives program guide information via the VBI of an analog signal.

3. The method of claim 1, wherein the step of linking the communications input/output port of the digital video receiver with the communications input/output port of the internet receiver may include establishing a low speed data communications bus and a high speed data bus.

4. The method of claim 3, wherein the high speed data bus is clocked by a signal from the digital video receiver.

5. The method of claim 1, wherein the digital video receiver comprising a DBS receiver.

5 6. In a stand-alone DBS receiver (10) for receiving DBS program information coupled to a stand-alone internet receiver (32) for receiving internet data, a method of delivering internet content to the display device comprising the steps of:

receiving a DBS data stream including internet content data;

10 processing the DBS data stream;

providing a data link(66) between the DBS receiver and the internet receiver;

transmitting the internet content data in the DBS data stream to the internet receiver (32) through the data link, wherein the internet content data is processed by the internet receiver and displayed on a display device (48).

7. The method of claim 6, wherein the DBS data stream includes digital video, the method further comprising the step of:

20 providing the DBS video to the internet receiver.

displaying the interactive content data on the display device.

8. The method of claim 6 wherein the data link is a wide-band data link.

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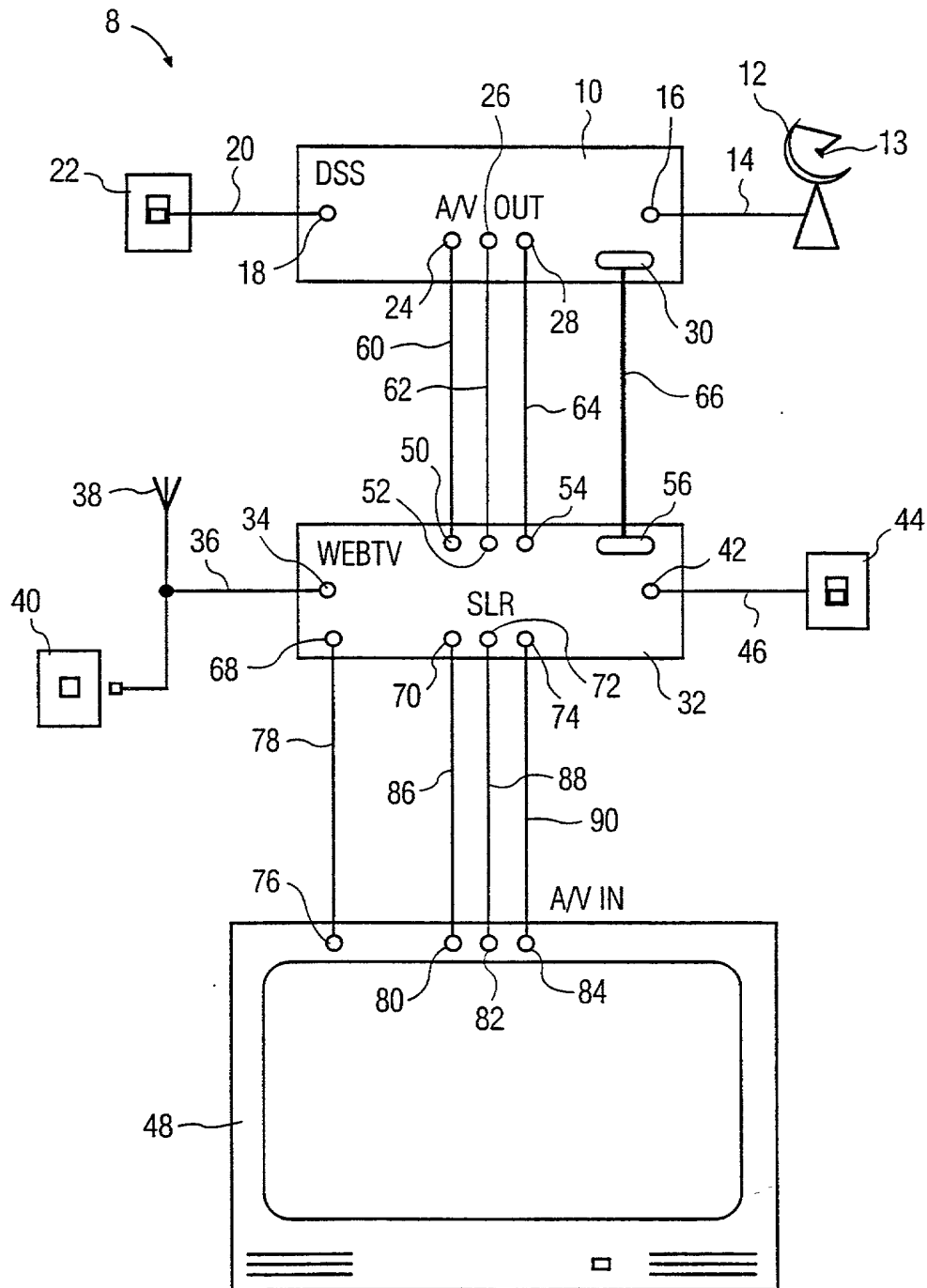


FIG. 1

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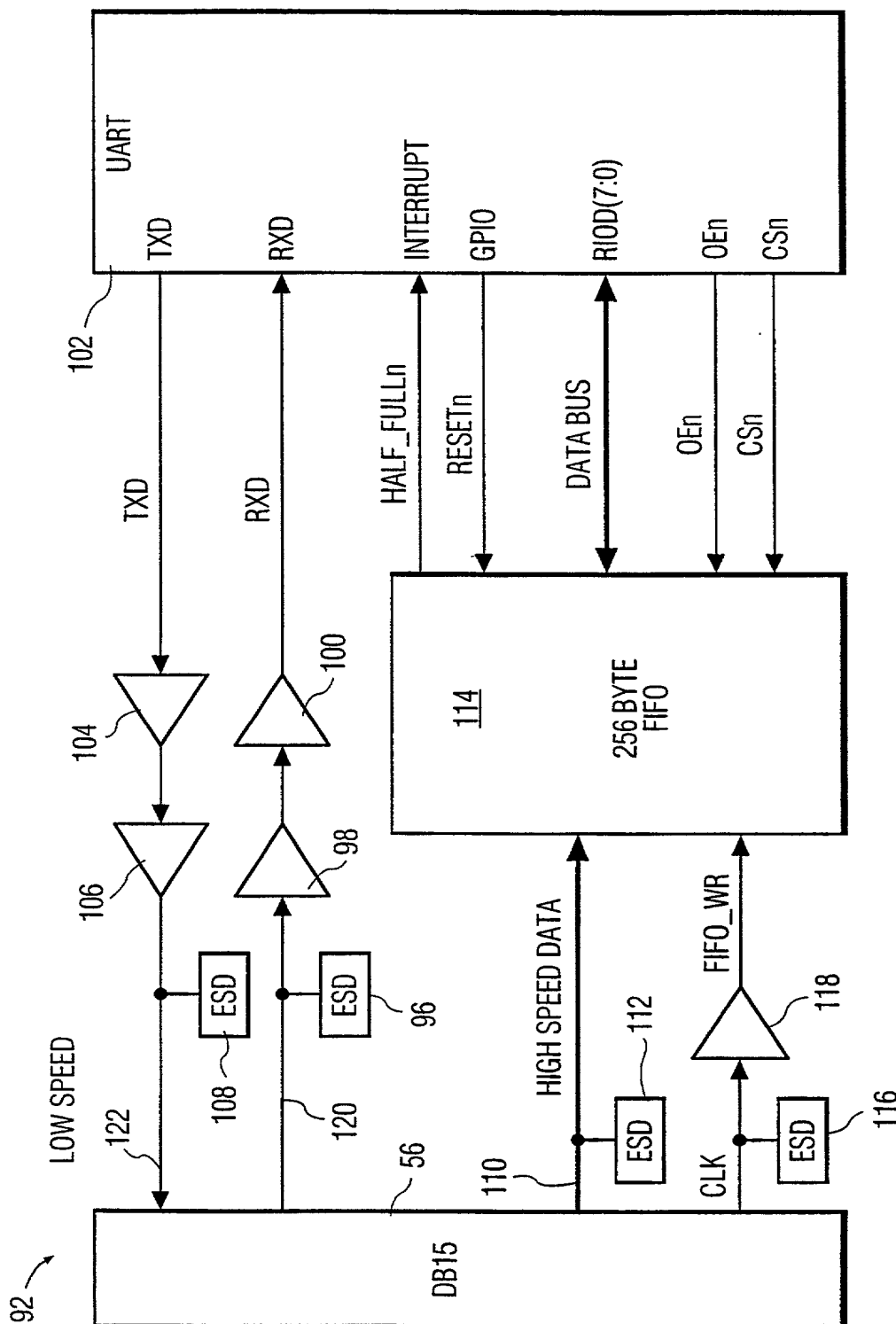
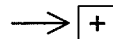


FIG. 2

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**DECLARATION FOR UTILITY OR
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PATENT APPLICATION
(37 CFR 1.63)**

☐ Declaration Submitted With Initial Filing
OR
☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

| | |
|--------------------------|-------------------------|
| Attorney Docket Number | RCA 89027 |
| First Named Inventor | Keith Reynolds Wehmeyer |
| COMPLETE IF KNOWN | |
| Application Number | / |
| Filing Date | |
| Group Art Unit | |
| Examiner Name | |

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DBS FEATURE EXTENSION ARCHITECTURE

the specification of which (Title of the Invention)

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) **June 30, 1999** as United States Application Number or PCT International

Application Number **PCT/US99/14832** and was amended on (MM/DD/YYYY) **August 6, 2001** (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

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| Prior Foreign Application Number(s) | Country | Foreign Filing Date (MM/DD/YYYY) Country | Priority Not Claimed | Certified Copy Attached? | |
|-------------------------------------|---------|--|--------------------------|--------------------------|--------------------------|
| | | | | YES | NO |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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☐ A petition has been filed for this unsigned inventor

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Family Name
or Surname WEHMEYER

Inventor's Signature Keith Reynolds Wehmyer

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☐ Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.